DOCUMENT RESUME

ED 275 885 CE 045 494

AUTHOR Roth, Gene L., Ed.
TITLE Trade and Industrial Education Research Committee. Proceedings of the Carrousel Session, American Vocational Association (Dallas, Texas, December 8, 1986).
INSTITUTION American Vocational Association, Alexandria, VA. Trade and Industrial Education Div.
PUB DATE 8 Dec 86
NOTE 43p.
PUB TYPE Collected Works - Conference Proceedings (021) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Career Choice; *Computer Assisted Instruction; Demography; Faculty Mobility; Higher Education; Job Satisfaction; Labor Turnover; Manufacturing; Microcomputers; Postsecondary Education; *Retraining; Robotics; Secondary Education; Self Concept; Teacher Attitudes; *Teacher Characteristics; Technological Advancement; *Trade and Industrial Education; *Trade and Industrial Teachers

ABSTRACT

These proceedings contain the texts of five research reports that were presented at a conference dealing with trade and industrial education. The following papers are included: "A Survey of Teacher Attitudes and Beliefs Related to the Use of Microcomputers in Vocational Education," by Steve Chi-Yin Yuen; "Retraining for Robotics and Other Forms of High Technology Manufacturing," by Robert E. Newton; "Age, Salary, and Related Demographics for University Faculty in Trade and Industrial Education," by Thomas L. Erekson; "Relationships among Esteem, Autonomy, Job Satisfaction, and the Intention to Quit Teaching of Experienced Industrial Education Teachers," by Michael D. Wright and Robert M. Tomlinson; and "T&I Teachers: Factors Influencing Their Decision to Teach," by Robert C. Harris and John R. Wittkamper. (MN)

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The Trade and Industrial Education Research Committee

A standing committee of the Trade and Industrial Education Division of the American Vocational Education Division

Proceedings of the Carrousel Session
American Vocational Association
December 8, 1986

Editor
Gene L. Roth

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Foreward

The Trade and Industrial Education Research Committee is a standing committee of the Trade and Industrial Education Division of the American Vocational Association. The mission of this committee is to promote systematic inquiry as a means of improving the quality of trade and industrial education programs and services. The committee accomplishes this mission through the organization of T&I research sessions at the annual American Vocational Association Conference and the development and dissemination of timely reports and monographs related to trade and industrial education.

This document contains five papers that were presented at the Trade and Industrial Education Research Committee's carrousel session at the 1986 American Vocational Association Convention, Dallas, Texas. These papers were selected for inclusion in this document following a blind juried review by members of the T&I Research Committee. The T&I Research Committee would like to thank the respondents to our call for papers. These are the researchers who have made the annual T&I Research session a reality.

Gene L. Roth, Chair
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TABLE OF CONTENTS

Title	Section
A Survey of Teacher Attitudes and Beliefs Related to the Use of Microcomputers in Vocational Education Steve Chi-Yin Yuen	A
Retraining for Robotics and Other Forms of High Technology Manufacturing Robert E. Newton	B
Age, Salary and Related Demographics for University Faculty in Trade and Industrial Education Thomas L. Erekson	C
Relationships Among Esteem, Autonomy, Job Satisfaction, and the Intention to Quit Teaching of Experienced Industrial Education Teachers Michael D. Wright Robert M. Tomlinson	D
T&I Teachers: Factors Influencing Their Decision to Teach Robert C. Harris John R. Wittkamper	E

SECTION A

A Survey of Teacher Attitudes and Beliefs Related to the Use of Microcomputers in Vocational Education

Steve Chi-Yin Yuen

A SURVEY OF TEACHER ATTITUDES AND BELIEFS RELATED TO THE USE OF MICROCOMPUTERS IN VOCATIONAL EDUCATION

by
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Paper Presented at the Annual Meeting of
the American Vocational Association
Dallas, Texas
December, 1986

A Survey of Teacher Attitudes and Beliefs Related to the Use of Microcomputers in Vocational Education

The increased availability of microcomputers in all aspects of education and work heralds a new era for vocational education. Vocational educators are now turning their attention to the microcomputer as an important job tool as well as a teaching tool for improving the instructional process. However, planning for the implementation of microcomputers in vocational education requires a carefully thought out series of steps, ranging from establishing the objectives in identifying the hardware and software to meet those objectives, to choosing the specific microcomputer. But even before initiating those steps, the most important one is to determine what teachers think about microcomputers. The investigation of vocational teachers' attitudes and beliefs related to the use of microcomputers will not only involve potential users in the early planning stages of microcomputer implementation, but will also provide valuable information for curriculum development, identification of instructional methods and strategies, enhancement of supervision and management, and upgrading of teacher training in vocational education.

Purpose

The purpose of this study was to determine the extent and present use of microcomputers in vocational education. In addition, the study sought to determine the knowledge, skill, and attitudes of vocational teachers toward microcomputers as well as their opinions regarding a

number of computer-related topics. Specific research questions posed for the study were:

1. What are the knowledge, attitudes, and interests of teachers toward the use of microcomputers in vocational education?

2. How do teachers view the impact of computerization on vocational education and their careers as teachers?

3. Do vocational teachers who use microcomputers differ from teachers who do not? If so, how?

4. Are there differences in attitudes toward using microcomputers in vocational education among various groups of teachers in terms of selected characteristics (i.e., sex, age, community type, school level, vocational area, education level, microcomputer training, utilization of microcomputers, and the availability of microcomputers)?

Method

Population and Sample

All vocational teachers in secondary vocational schools and post-secondary institutions in Mississippi during the school year 1985-1986 were considered as the target population. The final sample for this study consisted of 125 vocational teachers from 13 randomly selected secondary vocational schools and post-secondary institutions in Mississippi.

Data and Instrumentation

The data were collected through a mailed questionnaire. In order to answer the research questions, a five-page questionnaire consisting of 41 questions and statements was developed to gather data. The questionnaire

was constructed in two parts. The first part was designed to provide a demographic profile of the vocational teachers. The second part was designed to gather information about the present and projected uses of microcomputers in vocational education, vocational teachers' knowledge of microcomputers, instructional experience with microcomputers, and opinions regarding a number of computer-related topics such as in-service training, computing needs, and the effects of microcomputer use on students.

Data Analysis

Descriptive and inferential statistics were employed in the study. Descriptive statistical analysis provided answers to questions relative to teachers' knowledge and skill, and their opinions regarding a number of computer-related issues. Correlation analyses were used to search for relationships which existed among teachers' attitudes toward using microcomputers and selected variates relating to teachers' characteristics.

Chi-square analysis and one-factor analysis of variance were the major inferential statistical procedures used in the study. The chi-square test was used to determine whether user and nonuser responses were different. One-factor analysis of variance was used to investigate the difference in vocational teachers' attitudes toward using microcomputers in vocational education between/among various groups of teachers in relation to selected characteristics.

Results

Analysis of the background information indicates that only 22% of the vocational teachers surveyed own a microcomputer. Although all

schools in this study have microcomputers, only 59% of the vocational teachers indicate that they have microcomputers available for use in their programs. Fifty-four percent of the teachers report that they have microcomputers available for student use.

Fifty-four percent of the vocational teachers have received some computer training, usually they are self-taught or receive training from a college or university. In general, vocational teachers reported they were somewhat informed about any computer knowledge or skill area probed.

Vocational teachers were interested in learning about many computer-related subjects, in particular, about computer application programs (54.4%), how to operate a microcomputer (54.4%), and how to write computer programs (48.8%). Vocational teachers were especially interested in learning about computer instructional applications for computer literacy instruction and for maintaining student records. Furthermore, 86% of the vocational teachers expressed an interest in taking a course or attending a workshop to learn how to use a microcomputer in their programs.

Fifty-nine percent of the vocational teachers used microcomputers for instructional purposes. Most teachers who reported the effects of microcomputers on students (70% or more) believed the effect was positive on students' motivation, self-confidence, subject interest, attention span, and cognitive learning. Vocational teachers reported that their area of greatest need was for software or courseware (50%) followed by the need for personal knowledge about computing (22.2%) and more hardware (20.8%).

Two-thirds (67%) of the vocational teachers professed positive attitudes toward microcomputers, with a score greater than the median (neutral position = 3.0). Vocational teachers believed microcomputers would very likely be involved in a number of educational changes--for example, an increased demand for teachers with computer skills (64.8%), a common practice of learning by microcomputer in school (60.8%), schools without a computer curriculum regarded as inadequate (56.8%), computer skills regarded as a basic form of knowledge (56.8%), and the availability of microcomputers in most public schools (56.8%). Vocational teachers did not believe microcomputers would replace teachers (47.2%) or fade as a focus of instructional interest (38.4%). In general, vocational teachers viewed microcomputers as having a positive effect on their sense of professional challenge (65.6%), teaching effectiveness (64%), and job satisfaction (57.6%).

Significant differences were found between microcomputer users and nonusers for the variables: vocational service area and community type. Significant correlations were found between vocational teachers' attitudes about the use of microcomputers in vocational education and the following variables: sex, school level, microcomputer training, utilization of microcomputers, and the availability of microcomputers. In addition, there were significant differences in teachers' attitudes toward using microcomputers between/among various groups of teachers in terms of their community type, school level, microcomputer training, and the availability of microcomputers.

SECTION B

Retraining for Robotics and Other Forms of High Technology Manufacturing

Robert E. Newton

RETRAINING FOR ROBOTICS AND OTHER FORMS OF HIGH TECHNOLOGY MANUFACTURING

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Introduction

A national news commentator recently made the statement that high technology has the potential of creating numerous new jobs, but has the power to eliminate many old jobs. The industrial robot may be the representative of high technology that most exemplifies his statement. The industrial robot, along with it's first cousins CAD/CAM, CNC, and F.M.S. necessitates skills never before needed in the industrial workplace.

Demographically we know that over 75% of the work force of the year 2000 A.D. will be composed of persons on-the-job today. Approximately 7 out of every 10 workers on-the-job today will be those required to design, engineer, manufacture, install, program and reprogram the high technology equipment of the future. An article in the January, 1985 issue of "Manufacturing Engineering", quotes a vice-president of General Motors, who says, by the year 2000 most of the major manufacturers will have replaced the equipment in use in 1985. Computer compatibility with micro processor controls will surely be a distinguishing characteristic of tomorrow's equipment and the Industrial Robot will be the most often used symbol to illustrate automated flexible manufacturing.

However, very little has been done in either the academic or industrial community to retrain existing personnel in robotics and other areas of higher technology manufacturing techniques. Just as the key in future manufacturing is flexible automation, the key personnel will be those with a sufficiently broad base to be flexible.

Project Description

Morehead State University began activities in robotics in 1981. The activities were all directed at preparing entry level graduates for salaried technical and engineering positions. Retraining did not seem, at the time to be a high priority issue.

Because of our involvement in robotics, Browning Manufacturing, a Division of Emerson Electric, contacted us in October, 1983, with the possibility of retraining their blue-collar workers in robotics and computerized numerical control. Browning, like many other industries, was rapidly upgrading their manufacturing process to automated flexible computer control systems to compete in the world market by using high technology manufacturing applications. High technology applications do not often create numerous new jobs, but often creates the demand for individuals with a different level of training.

With this rationale, Browning Manufacturing and Morehead State University, began to develop a concentrated retraining program for current employees to be able to maintain, program, set-up, and operate the CNC Machine Tool/Robot Manufacturing Cells.

Funding

Funding for the project was obtained through the Department of Manpower Services, Kentucky Division of Human Resources. Under P.L. 97-300 JTPA (Job Training Partnership Act), there are 28 suggested activities which may be available for manpower training.

The Project

The project was conducted January 1, 1984 - September 30, 1984. The training was conducted in two modes:

1. On-the-job segment: One university faculty was assigned on-site in the plant full-time to provide immediate instruction to groups or on an individual basis as the new machines were installed and moved into production. Training concentrated on "have to know" details for the machine operations of initial start-up/stop, reinitialization after difficulties or after reprogramming for a new part, console controls, installing of tooling, etc. This segment allowed production to begin before the completion of the entire retraining and was a necessary requirement of the project.
2. Classroom/laboratory segment: Four university faculty were assigned half-time each for the on-campus portion of the training. Sessions were scheduled as follows:

	Tuesday	Wednesday
Group A	12:30 - 3:30	12:30 - 3:30 Classroom
Group B	12:30 - 3:30	12:30 - 3:30 Laboratory
Group C	6:00 - 9:00	6:00 - 9:00 Classroom
Group D	6:00 - 9:00	6:00 - 9:00 Laboratory

Groups were moved from classroom to laboratory and from laboratory to classroom depending upon what portion of the curriculum was being covered. The groups began at different times with Group A and B

beginning in January with the other groups phased in by the end of March. Participants were paid by Browning for the hours they were on-campus up to the time necessary for their particular job title.

Faculty

Four university faculty were assigned to the project. One faculty was assigned full-time, one 80 percent time, and two were assigned half-time. Total faculty involvement was equal to 2.8 FTE (full-time faculty equivalent).

The faculty involved had a basic familiarity with robotics and CNC. The faculty selected had also all taught classes in various industrial sites and were therefore comfortable with instructing hourly employees. Early in the project all four faculty attended the various factory sponsored schools to become familiar with "machine specific content".

As previously described, one faculty was assigned in-plant from January, 1984 throughout the duration of the project. The remaining faculty were responsible for the related classroom instruction. The classroom portion of the project with clock hours per topic was as follows:

Mathematics & Blueprint Reading 19

Robot Programming & Maintenance 26

Percision Measuring, Lathes & Tooling 16

CNC/Robot Controls & Programming 80

Introduction to Robotics 4

Electricity/Electronics 30

Evaluation

Evaluation results to this date have been totally satisfactory. The success of the training far exceeds initial expectations both in dollars saved by cost improvements and by establishing confidence and enthusiasm among all levels of management and labor. Two significant observations can be made at this time:

1. This type and level of training is possible, feasible and readily accepted by the participant.
2. This type of training will remove the mystique of CNC/Robots. The new high technology equipment installed is nothing more than another machine tool and once understood is capable of significant improvements in both quality and quantity of manufacturing parts.

When questioned as to what does this mean to the future of Browning Manufacturing and Morehead State University, the answer is this type of training is an excellent opportunity to develop stronger bonds between industry/business, educational institutions and state government.

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SECTION C

Age, Salary and Related Demographics for University Faculty in Trade and Industrial Education

Thomas L. Erekson

AGE, SALARY AND RELATED DEMOGRAPHICS FOR UNIVERSITY FACULTY IN TRADE AND INDUSTRIAL EDUCATION

A Research Paper Presented at:

The American Vocational Association National Convention
Trade and Industrial Education Division

Dallas, Texas

December 8, 1986

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AGE, SALARY AND RELATED DEMOGRAPHICS FOR UNIVERSITY FACULTY IN TRADE AND INDUSTRIAL EDUCATION

Prepared and Presented by:

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Introduction

Recent attention to a potential shortage of talented, qualified persons willing to accept university employment suggests that universities will have difficulty hiring new faculty in the near future (Bowen & Schuster, 1985; Erekson & Birks, 1986; Watkins, 1986). Several universities, faced with increased competition for the "best" talent, have initiated recruitment programs and incentives to attract new faculty (Watkins, 1986). Many of the "new" recruitment/incentive activities are based on demographic research describing the population of university faculty. Demographic data are needed by individuals in university leadership positions to provide a base for employment decision making.

Statement of the Problem

The problem of this study was to determine selected employment-related demographic characteristics for university faculty listed as teaching trade and industrial education.

Methods

A survey was conducted in March-April, 1986, of the 253 department administrators listed in the Industrial Teacher Education Directory (Dennis, 1985-86) to collect specific demographic data for all faculty listed. The data collected included rank, highest degree, teaching area(s), age, sex, nine month salary, tenure status, years in higher education and at institution, type of institution, size of institution, and early retirement options.

Using the Statistical Package for the Social Sciences (SPSS) all trade and industrial education faculty were selected for specific demographic analysis.

Findings

Of the 253 department administrators listed in the ITE Directory, 165 responded. Because of the sensitive nature of the data requested, 7 of the department administrators indicated that could not, or would not, be able to complete the questionnaire. The usable responses accounted for 1,397 faculty of the 2,733 faculty listed in the ITE Directory.

Trade and Industrial Faculty

For the purpose of this paper, all faculty who were listed as teaching "trade and industrial" education or "vocational industrial" education in the ITE Directory were selected by computer for specific analysis. This selection produced 74 T & I university faculty. Of these 74 faculty, 27% were teaching in doctoral granting institutions, 77.1% had completed the doctorate, 60.6% held the rank of associate or full professor, and 93.2% were males.

Tenure Status. Most of the T & I faculty were in a tenure track position (70.6%). The percentage of faculty in tenure track for the total population was 83.3%. Thus, a smaller percentage of T & I faculty were in tenure track positions. This may be as a result of "soft" money positions funded by state departments of education to provide inservice.

Of those in a tenure track, 80.8% of the T & I faculty had received tenure. The percentage of all faculty in tenure track positions who had received tenure was 74.4%.

Age. The age of T & I faculty ranged from 34 years old to 67 years old (R=33 years). The age range for the total population was from 24 years old to 69 years old (R=45 years). The mean age for T & I faculty was 48.6 years old and the median age was 49.6 years old. The mean age for the total population was 46.7 years old with the median being 45.7 years old.

Table 1 presents the age for T & I faculty by rank. As shown in Table 1, the higher the rank, the older the mean age of T & I faculty. This is logical as promotion requires time and performance.

TABLE 1, Age by Rank for T & I Faculty

Rank	T & I Faculty			All Faculty		
	Range	Mean	Median	Range	Mean	Median
Lecturer	34-50	39.3	39.0	24-63	37.8	36.2
Assistant	36-67	48.2	49.8	25-67	42.9	40.8
Associate	38-61	49.6	50.5	29-67	47.4	46.2
Professor	40-62	51.4	52.7	36-69	52.1	51.6
Total	34-67	48.6	49.6	24-69	46.1	45.7

Salary. The nine month salaries for T & I faculty ranged from a low of $12,060 to a high of $45,590. The mean nine month salary was $31,362 and the median nine month salary was $32,058. This compared to the total population of faculty with salaries ranging from $12,060 to $60,000 with a mean of $30,703 and median of $29,999. Thus, the T & I faculty had higher mean and median nine month salaries than the total population but had a lower "highest" salary.

Table 2 presents the nine month salaries by rank. It should be noted that the mean nine month salary for T & I faculty and all industrial education faculty was lower than the mean salary for all university faculty as reported by Hansen (1986). The T & I mean was 31,362, the mean for all industrial education faculty was $30,700, and the mean for all university faculty was $33,090. Thus, on the average T & I and other industrial education faculty are earning lower salaries than other university faculty.

TABLE 2, Salary by Rank for T & I Faculty

Rank	T & I Faculty Range	Mean	Median	All Faculty Range	Mean	Median
Lecturer	12,060 33,000	22,376	12,903	12,060 38,000	22,042	21,599
Assistant	20,780 33,000	26,719	26,050	16,800 41,000	26,376	26,250
Associate	26,210 42,192	34,059	33,400	17,279 54,924	32,076	31,995
Professor	22,512 45,590	36,982	38,503	18,699 60,000	37,698	37,476
Total	12,060 45,590	31,362	32,058	12,060 60,000	30,703	29,999

A further analysis of the salary data revealed that T & I faculty who had completed the doctorate earned higher nine month salaries than those who had completed only the Masters degree. The mean nine month salary for T & I faculty who had attained the masters degree was $25,446. The mean nine month salary for T & I faculty who had attained the doctorate was $33,275.

Implications

Definitive implications about an over or under supply of university T & I faculty are difficult to draw from the data presented. 12.7% of the T & I faculty are 60 years old or older and 70.8% of the T & I faculty are at institutions that offer early retirement options. While T & I

faculty are older than other university level industrial education faculty and retirement projections could be made, actual demand for new T & I faculty will be affected by other factors (e.g, staffing patterns in higher education, demand for new T & I teachers in high schools/AVCs). With only 70.6% of the T & I faculty in tenure track positions, non-tenure position may not be filled as university enrollments decline. Positions that are tied to soft money also may be in jeopardy as budgets tighten.

Staffing university T & I faculty positions may be difficult given the salary structure. With several states and local school districts increasing salaries for teachers, universities may find that school teachers who may be good candidates for university teaching positions will not consider university teaching because they currently earn more than universities can offer.

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SECTION D

Relationships Among Esteem, Autonomy, Job Satisfaction, and the Intention to Quit Teaching of Experienced Industrial Education Teachers

Michael D. Wright

Robert M. Tomlinson

Relationships Among Esteem, Autonomy, Job Satisfaction, and the Intention to Quit Teaching of Experienced Industrial Education Teachers

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Running head: JOB SATISFACTION OF INDUSTRIAL EDUCATION TEACHERS

Relationships Among Esteem, Autonomy, Job Satisfaction, and the Intention to Quit Teaching of Experienced Industrial Education Teachers

Several studies of teacher satisfaction based on Maslow's (1954) theory of a needs hierarchy have repeatedly supported the importance of need fulfillment for job satisfaction (Carver & Sergiovanni, 1971; Frances & Lebras, 1982; Sweeney, 1981; and, Trusty and Sergiovanni, 1966). Without exception, these authors cite the three higher-order needs of esteem, autonomy, and self-actualization as being unfulfilled needs leading to low teacher satisfaction.

Of the three higher-order needs, esteem was found to be important in several studies (Chapman and Lowther, 1982; Edmunds, 1982; Sweeney, 1981; and, Weller, 1982). The measures of esteem in these studies included items related to recognition, status, and the need to be held in high regard.

Studies that have focused on job satisfaction of teachers, including industrial education teachers, most of which utilized mail questionnaires have consistently identified salary and fringe benefits as the greatest factor related to satisfaction and teacher turnover. Other factors, such as those in Maslow's (1954) hierarchy, have been identified as secondary. However, the nature of these secondary factors for industrial education teachers have received limited attention.

Statement of the Problem

The problem of this study was to determine the extent to which the stated intention to continue or discontinue employment in the teaching profession by experienced industrial education teachers was related to (1) job satisfaction,

(2) esteem, (3) autonomy, and (4) selected demographic variables. This study also explored the relationships that existed between and among these variables.

Research Questions

The General Research Question of this study was: What are the relationships between and among perceived esteem, autonomy, job satisfaction, the expressed intention to quit teaching, and selected demographic variables. The General Research Question was investigated through the use of a series of more specific research questions.

Population and Sample

The population of this study was all full-time industrial education teachers who taught in public comprehensive high schools in downstate Illinois outside the city of Chicago and its suburbs and East St. Louis. Subjects were identified by randomly selecting school districts, high schools, and then an individual teacher. The sample was stratified according to "Department Size": "small" if one teacher; "medium" if two or three teachers; and "large" if four or more industrial education teachers were in the department. Only one teacher was selected from any one school and only one school was selected in any one district. Fifteen teachers were selected for each department size.

Method

A structured interview by telephone was used to solicit the in-depth information necessary to answer the research questions. The data were collected during April and May, 1985.

Instrument

The Teacher Interview Form, developed by the researcher, was designed to collect specific demographic information, solicit information regarding the amount of perceived actual and desired esteem, perceived actual and desired

autonomy, measures of job satisfaction associated with the teacher's position, and the intention to continue or discontinue teaching. A six-point Likert-type scale was used to record the responses. End points were labeled "essentially none" and "a very great amount". Ratings were obtained on several aspects of esteem and autonomy, independently for actual and desired. This procedure permitted calculation of discrepancy scores between actual and desired for each aspect of esteem and autonomy.

Summary of Findings

The teachers in this study were all experienced teachers and did not differ significantly by age or experience across school size: 96% had more than seven years of teaching experience and the mean age of the teachers was 41.3 years. More than one-half of the teachers (53%) had salaries in the $17,001 - $22,000 range. Only one teacher had a salary over $32,001. There was a significant relationship between salary and school size.

The traditional woodworking, metalworking, and drafting accounted for 73.3% of the teachers' assignments, although most teachers were aware that a technology systems based curriculum was being adopted in Illinois. The five characteristics related to school and community size (type of community, population, average daily attendance, department size, and class size) were highly inter-correlated.

The teachers desired and perceived to receive the most esteem from their students, followed by the professional respect of other teachers. The largest discrepancy, the difference between desired and actual, for esteem was found for those items related to respect for their industrial education program. There were some consistent patterns in the responses by department size. Teachers in smaller communities and schools perceived significantly more esteem for program

respect, student respect, the professional respect of fellow teachers, and mean actual esteem than teachers in medium schools, while perceptions of teachers in large and medium schools were very similar. Comments related to esteem by the teachers indicated that many local communities did not value industrial education. One-third of the comments indicated that the teachers perceived some group(s) to have a negative attitude toward the industrial education program.

The teachers reported the most actual autonomy for being able to select where to purchase supplies and materials, followed by curricular freedom and personal use of the shop, especially in small departments. The least actual autonomy, and the greatest discrepancy score for autonomy, was reported for control over the extra use of the shop or lab by other personnel and choice over whether to participate in extra assignments. Teachers in small schools had significantly greater freedom than teachers in large schools for their personal use of the shop. The most frequent comments by the teachers related to autonomy indicated that they had little or no control over the use of the shop by other personnel who consumed supplies, broke or abused tools, and generally left the shop or laboratory in a mess.

The teachers indicated a moderate amount of satisfaction with various aspects of their jobs (mean = 4.5 on 6.0 scale). The teachers indicated the most satisfaction with being a teacher of industrial education and the least satisfaction with salary and benefits. There was a strong relationship between satisfaction with being an industrial education teacher and satisfaction with the students the teacher had in class. There were no significant differences for job satisfaction by department size.

In total, more than one-half of the teachers (53.3%) indicated that they did not intend to continue teaching or were unsure if they would continue

teaching for the next five years. There was no significant difference, by department size, in the stated intention to quit teaching.

There was a low correlation between mean satisfaction and the intention to quit teaching. There was a low correlation between satisfaction with salary and benefits and the intention to quit teaching. Actual salary was not significantly correlated with either mean satisfaction or the intention to quit teaching.

Mean satisfaction had a positive, moderate correlation with mean actual esteem. There was essentially no correlation between mean satisfaction and mean actual autonomy. There was essentially no correlation between the intention to quit teaching and either mean actual esteem or mean actual autonomy, although the intention to quit teaching had a moderate negative correlation with principal recognition. There was essentially no correlation between the stated intention to quit teaching and any of the demographic characteristics.

A multiple regression approach to predict general satisfaction identified, respectively, principal recognition, satisfaction with their teaching assignment, years in current assignment, and age. Together, these four variables accounted for 39% of the variance in general satisfaction, R=.63, significant at the .001 level.

Discussion

For a variety of reasons, the teachers felt that groups outside the school did not respect, and were not supportive of, industrial education programs. Comments regarding low community support were the most frequent comments made by the teachers. The perceived attitudes of the nebulous "community" may not have been entirely unfounded given that 73% of the industrial education programs were still organized around unit shops, with many programs essentially unchanged

since the post World War II era. It is possible that introduction of a technology education curriculum would improve the image of the program in the community.

It was suspected at the outset of this study that the issue of salary and benefits, although a factor, may not be the primary determinant of job satisfaction as had been suggested by the literature review. The results of this study indicated that actual salary had a significant but comparatively low correlation with satisfaction (r=.24). Mean satisfaction was most correlated with principal recognition (r=.49) and the intention to quit teaching was most correlated with the discrepancy between actual and desired recognition by the principal, (r=.32) in this study.

Many of the factors and conditions described by the teachers which related to the esteem and autonomy of industrial educators and their programs can be affected or improved by the actions of the building principal. While the teachers in this study were still teaching, the implication is that principal recognition and appreciation may be an important consideration in overall satisfaction and the intention to quit teaching. This intention to quit teaching may be more detrimental to the students in the long run than actually leaving the profession.

Conclusions

To the extent that the sample selected for this study was representative of experienced industrial education teachers, the following conclusions may be drawn from the findings and discussion:

1. Industrial education teachers have a great deal of pride in their profession. These teachers desire and receive high esteem from their students and peers but not from the community.

2. Industrial education teachers are generally satisfied with their jobs but have low satisfaction with their salary and benefits. There is a low correlation between actual salary and satisfaction with salary and benefits.

3. The overall job satisfaction of the teachers is related to the perceived amount of actual esteem but less related to the perceived amount of actual autonomy.

4. There is a low relationship between overall job satisfaction and the expressed intention to quit teaching. Neither actual salary nor the teacher's satisfaction with their salary is related to the expressed intention to quit teaching.

5. Teachers in small schools perceive that they have comparatively higher levels of actual esteem than teachers in medium departments and relatively more autonomy than teachers in large schools.

6. Industrial education teachers, when asked directly, consistently report the highest level of dissatisfaction with salary and benefits, similar to what has been reported in many other studies. However, when provided the opportunity, they identify other personal, professional, and teaching environment factors as being more highly related to satisfaction and the intention to quit teaching.

7. The results of this study indicate that changes in some non-salary areas could lead to improved job satisfaction and retention of industrial education teachers. These teachers are sensitive to their image and esteem in the school and in the community. Specific areas where improvements can be made include: (1) demonstrating greater recognition and appreciation by the building principal, (2) enhancing communications and/or relationships among the teachers and between the teachers and the community, and (3) granting industrial education teachers more control over their programs, budgets, and facilities.

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SECTION E

T & I Teachers: Factors Influencing Their Decision to Teach

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T & I Teachers: Factors Influencing Their Decision to Teach

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Trade and industrial occupational programs require teachers who are occupationally competent. Because of this premise, all states select teachers on the basis of their occupational expertise in spite of the possible limitation of little formal education in a teacher education program. Thus, provisions are made to hire teachers from industrial settings. A substantial number of teachers enter the profession after working a number of years in industry.

From the teacher's perspective, this transition from working in skilled occupations to working in public education settings constitutes an important career change. Given the age of most of these teachers, this transition frequently involves what has come to be known as a mid-life career change (Sheehy, 1977; Geller, 1981). Understanding the decision processes and factors influencing these decisions provides valuable information both to prospective teachers and their potential employers. The purpose of this paper is to offer practical suggestions to administrators based on knowledge generated from a statewide study of mid-life career changers (teachers) in trade and industrial occupations within Indiana. While the details of the study will be briefly mentioned, our primary intention is to use the findings from the study to illuminate their practical utility. Suggestions are offered which can affect recruitment, selection, and the administrators' influence over the work environment.

Overview of the Study

A small sample of 35 male trade and industrial teachers representing 14 occupational areas was used. The teachers represented urban, suburban, and rural secondary school settings. They ranged in age from 30 to 49 with an average of 14.3 years industrial experience. Since the study focused on mid-life decisions, it was important that these teachers be relatively new to the field of teaching. Thus, their average experience in teaching was 2.7 years.

The small sample size was intentional since an intensive interview method was used to generate the data. The interview was (a) structured (e.g., specific questions were asked but follow-up probes based on the teachers' initial answers were used to encourage elaboration of their responses) and (b) uniformly administered (except for the probes). All of the interviews were recorded and later transcribed to allow for the aggregation and summarization of responses. Two major themes of questions were built into the interview: (a) What factors lead to the teachers' mid-life change decision? and (b) What factors influenced their decision to teach? The interview transcripts were analyzed by classifying responses within these two questions.

Findings

The study's findings appeared to fall within two broad theoretical constructs. First, the decision to change appeared to be related in large part to need theory primarily framed by Maslow (1954). The second construct of importance was the influence to teach which appeared to be closely related to job satisfaction and agree most consistently with the Herzberg (1966) job satisfaction theory which distinguishes between hygiene and motivational factors.

The implications of these findings will be developed in the following sections and handouts will be available which provide insight into how this information can be used for managing occupational programs.

Teaching in the private sector. A substantial number of teachers (74.3%) experienced teaching in the industrial environment. Usually this experience involved mentoring other employees or providing inhouse short term task specific training. What appears to be a critical factor, however, was the insight the future teachers acquired from this experience. In all cases, they mentioned the positive impact this experience had in helping them assess their interest in teaching. Thus, the encounter served as a sample or trial experience which later came to influence the major career change by suggesting the kind of people centered contact and learning interaction with the teacher's pivotal role which is so fundamental to the teaching-learning process.

The impact of this limited, industry experience on the eventual decision to change is valuable information for recruitment and selection processes. Administrators should explore the potential teacher's previous opportunity to serve in a teaching capacity, assess their insight about this experience and, if possible, determine the strength of this impact on the prospective teacher's thinking.

Personal need. A diverse array of needs were evident by the teachers' responses. While one might expect the usual economic conditions (e.g., laid-off, medical reasons, need for greater income) the majority of the teachers reflected needs which were much more idealistic in emphasis (e.g., self-improvement, desire to work with young people, looking for a challenge, trying something new, etc.). Thus, the teachers' needs were not so much imposed or structural as one of seeking the opportunity to attain a position offering greater opportunities for self-realization.

This insight about the idealistic need to fulfill one's self through work represents another important line of thought for administrators. It can, for example, help administrators plan a recruitment effort for new teachers and identify factors for structuring interview questions which might explore a person's needs in relationship to the opportunity to fulfill this need through teaching. Understanding the importance of personal need will provide perspective on a person's long term potential for teaching. Clearly, the need for personal satisfaction is important for the mid-life job change and the person often has a clear perspective on the importance of this need.

Satisfaction. Concern for job satisfaction appears to be related to the discussion of personal need. A very substantial number of the teachers (89%) noted "motivational" factors influenced their job satisfaction. Of particular importance were comments demonstrating the need for achievement, recognition, challenge, responsibility, and a sense of personal growth. In contrast, a few teachers emphasized factors such as hourly schedule, working conditions, job security, or income. These latter factors are frequently the source of one's unhappiness but seldom a basis for real job satisfaction or job happiness.

Thus, satisfaction appears to have implications for at least three major concerns of administrators. First, it is important to assess one's basis of job satisfaction in past work opportunities. At least in the study, the sense of autonomy and opportunity to affect one's own achievement was a key factor in their selection of teaching as a career. Second, the working environment of the teacher (i.e., classroom to the total school) can take many forms. The type of environment can be influenced greatly by the administrators' policies and procedures. Given the teachers' high value for achievement,

challenge, and responsibility, efforts to create an environment where the satisfaction of these desires can be realized is very important. Finally, these job satisfaction factors clearly have implications for supervision. There seems to be a basis for the mutual development of objectives and the establishment of review and supervision activities which emphasize goal attainment of the teachers along lines closely paralleling their job satisfaction needs.

Summary

The recommendations for recruiting and selecting teachers, setting the instructional environment, and supervising teachers was drawn from the findings of an intensive study of 35 T & I teachers. Job satisfaction which had a strong motivational factor emphasis and personal needs which were idealistically oriented were very influential in the teachers' mid-life career change decision. What we have tried to accomplish in this paper is to interpret the results of the study in light of their implications for education practice.

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